

Regression Coefficient Example

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```
clearvars
load pnnl_napalm_data
```

Compute the regression coefficient matrices, B , for Classical Least Squares (CLS), Principal Component Regression (PCR), and Partial Least Squares (PLS).

```
[C_cls, B_cls] = pnnl_cls(A_train, C_train, A_unknown);
```

For PCR, use 3 principal components.

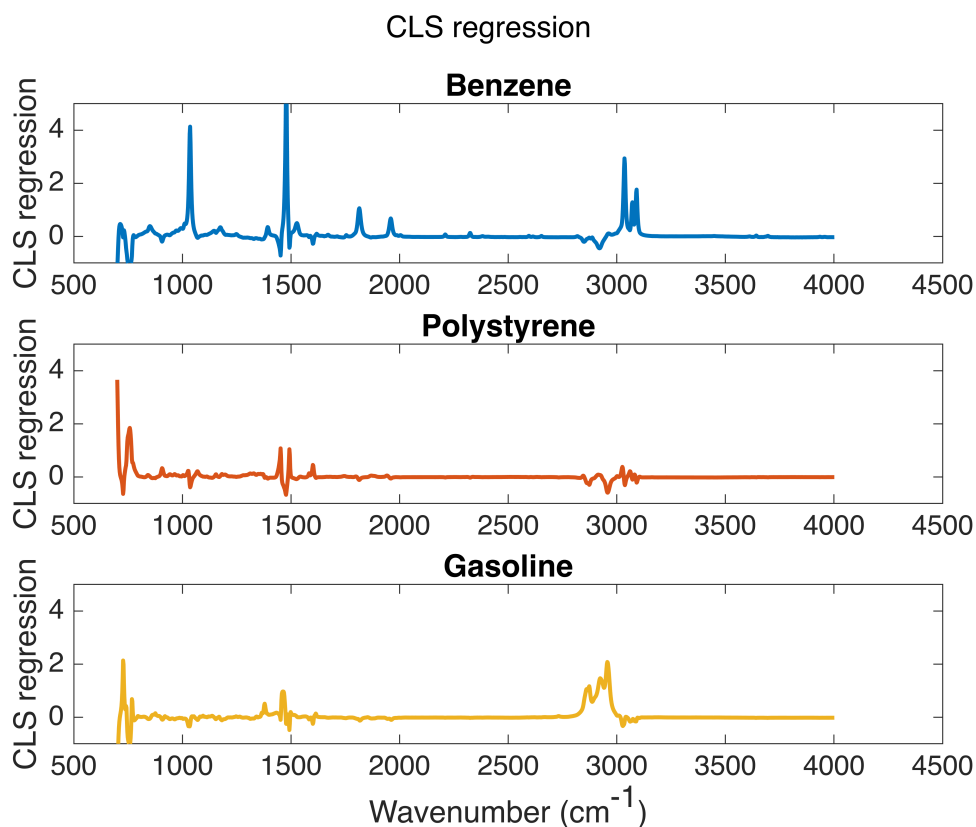
```
[C_pcr, B_pcr] = pnnl_pcr(A_train, C_train, A_unknown, 3);
```

For PLS, use 3 latent variables.

```
[C_pls, B_pls] = pnnl_pls(A_train, C_train, A_unknown, 3);
```

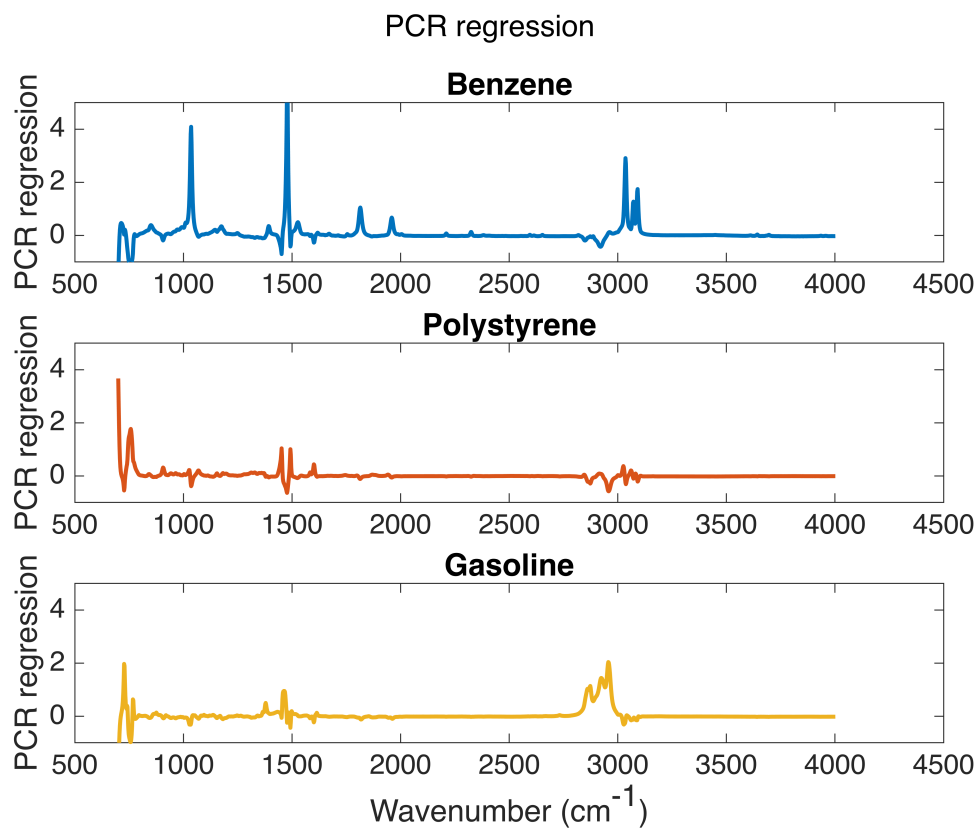
Plot regression coefficients for CLS.

```
plot_regression_coefficients(B_cls, 'CLS regression', Wavenumbers, WavenumberLabel, Consti
```



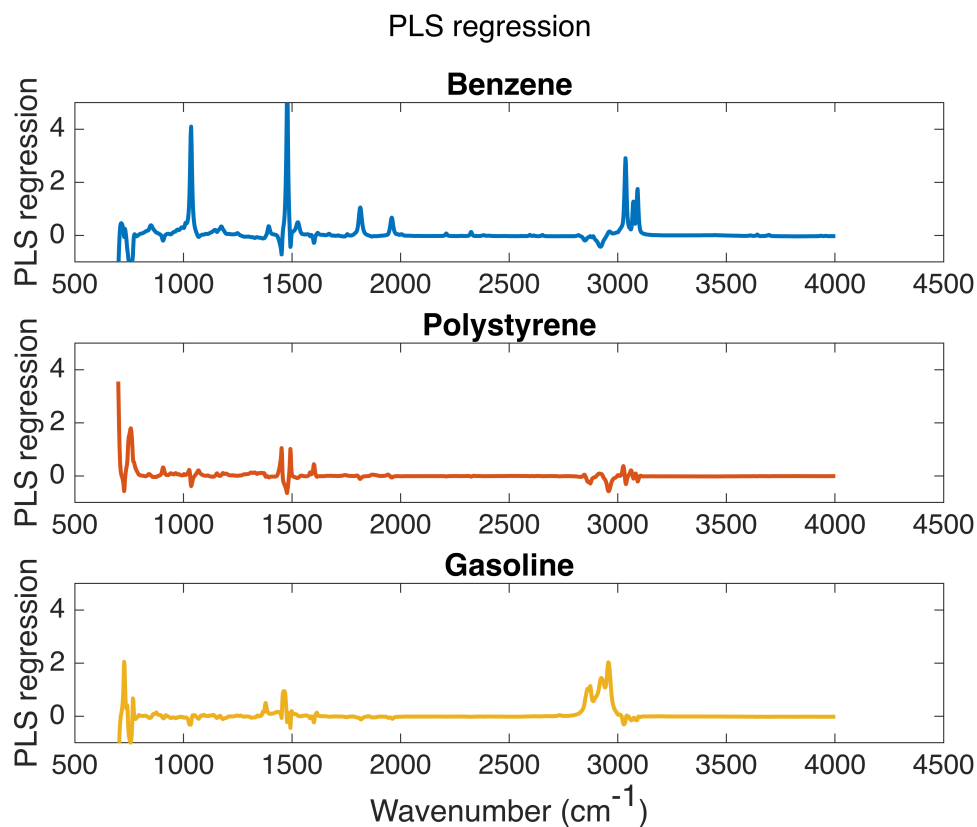
Plot regression coefficients for PCR.

```
plot_regression_coefficients(B_pcr, 'PCR regression', Wavenumbers, WavenumberLabel, Consti
```



Plot regression coefficients for PLS.

```
plot_regression_coefficients(B_pls, 'PLS regression', Wavenumbers, WavenumberLabel, Consti
```



```
function plot_regression_coefficients(B,y_label,Wavenumbers,WavenumberLabel,ConstituentNames)
figure
n = size(B,2);
colorOrder = pnnl_colorOrder(n);
figure;
h = gobjects(1,n);
for j = 1:n
    h(j) = subplot(n,1,j);
    plot(Wavenumbers,B(:,j),'LineWidth',2,'Color',colorOrder(j,:));
    title(ConstituentNames{j})
    ylabel(y_label)
end
sgtitle(y_label)
linkaxes(h)
xlabel(WavenumberLabel)
set(h,'FontSize',14,'YLim',[-1 5]);
end
```

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under Contract DE-AC05-76RL01830